



## Nutzen von Referenzarchitekturen wie RAMI oder RAMA zur Erhöhung der IT Security im IoT

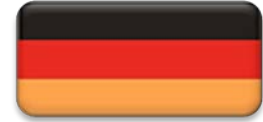
Markus Bartsch

# German Approach

## 3 parallel Activities



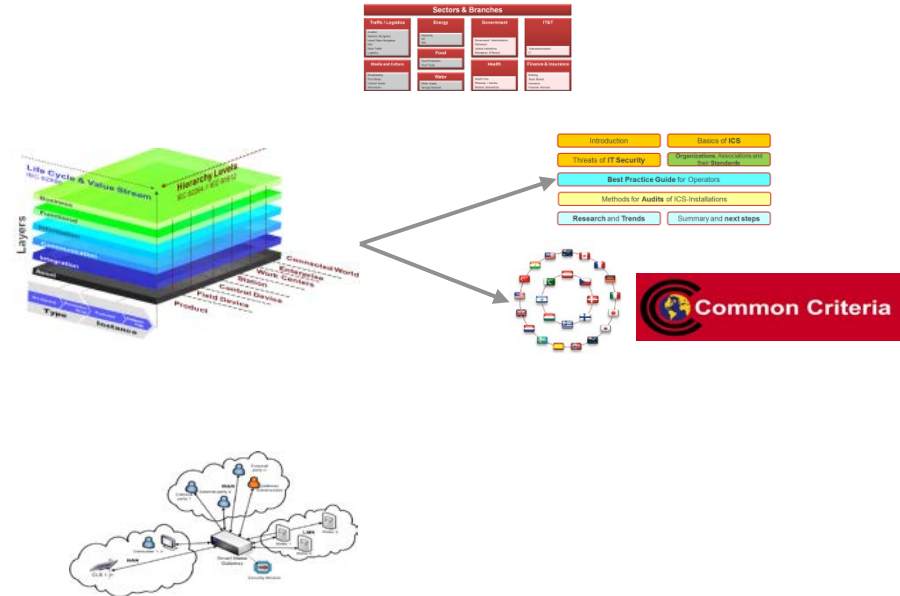
Federal Office  
for Information Security



➤ Legal Framework / CIP

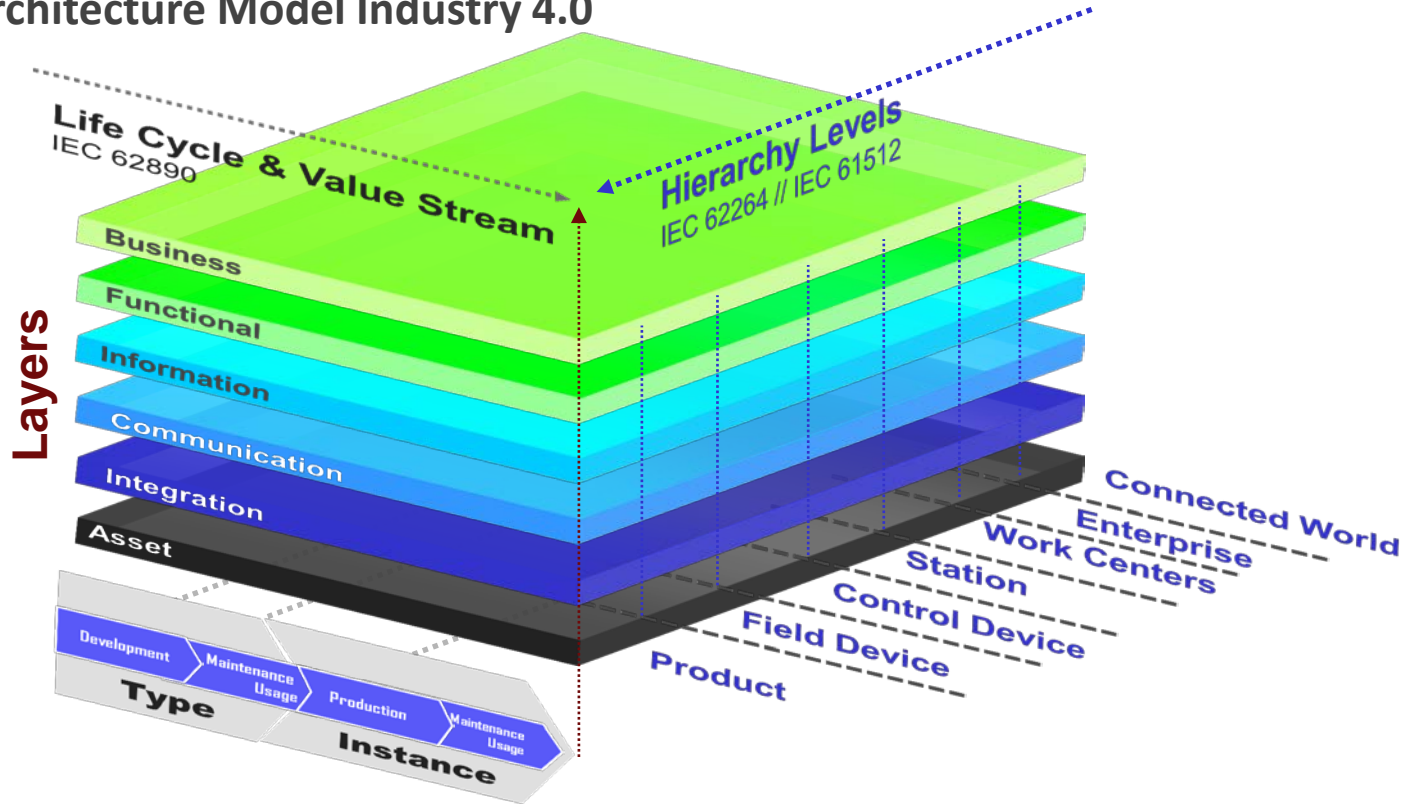
➤ Models & Methods

➤ Technologies



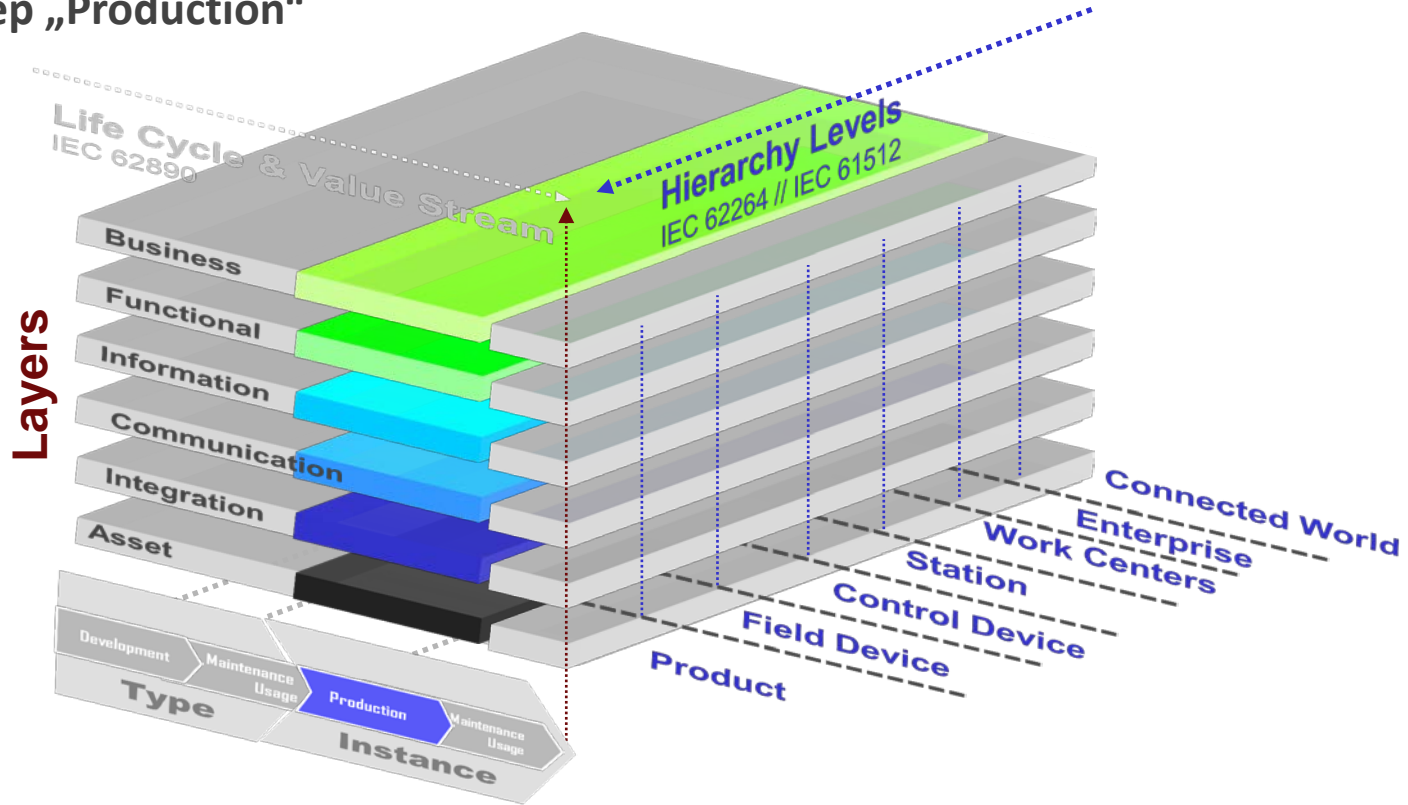
# RAMI

## Reference Architecture Model Industry 4.0

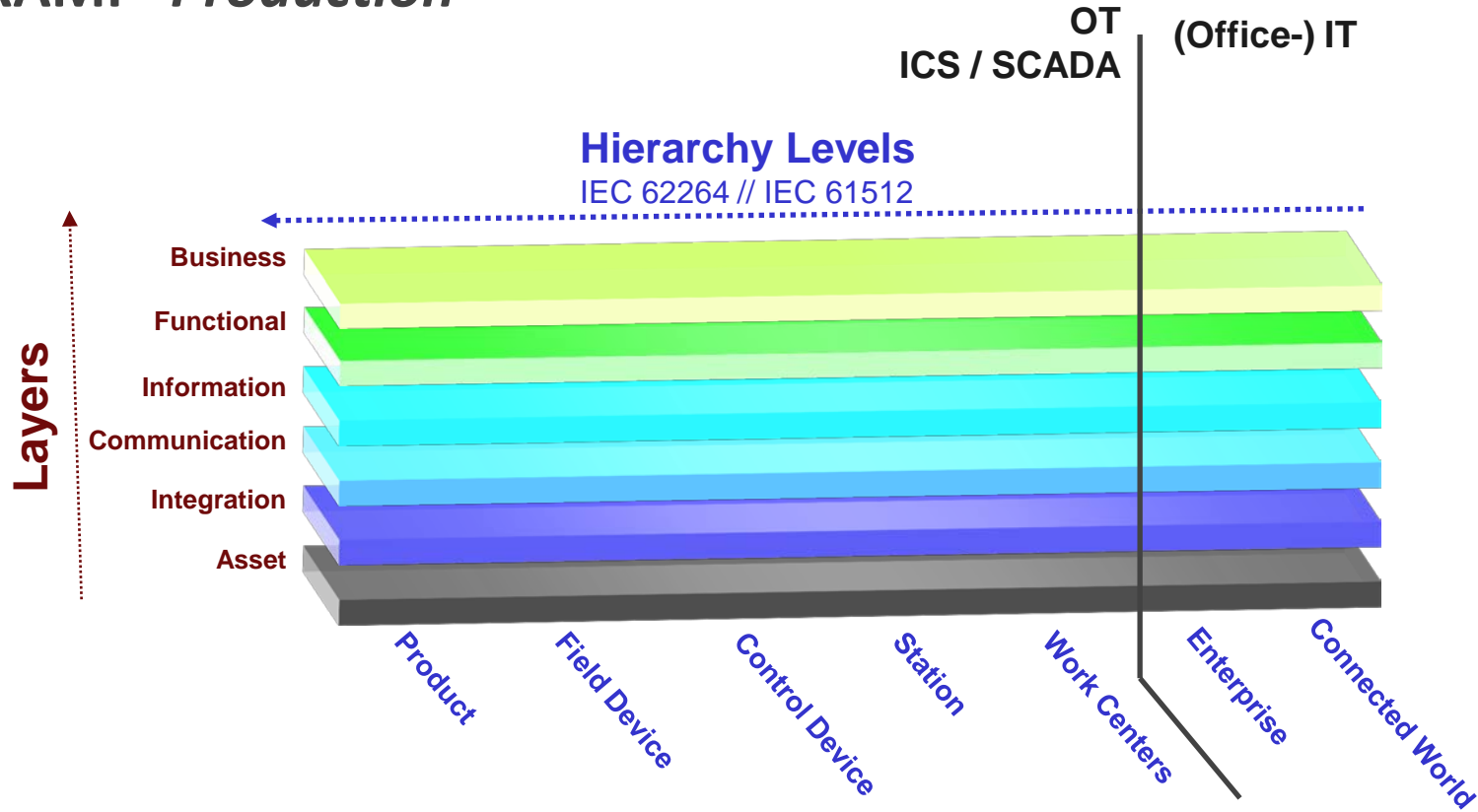


# RAMI

## Life Cycle Step „Production“

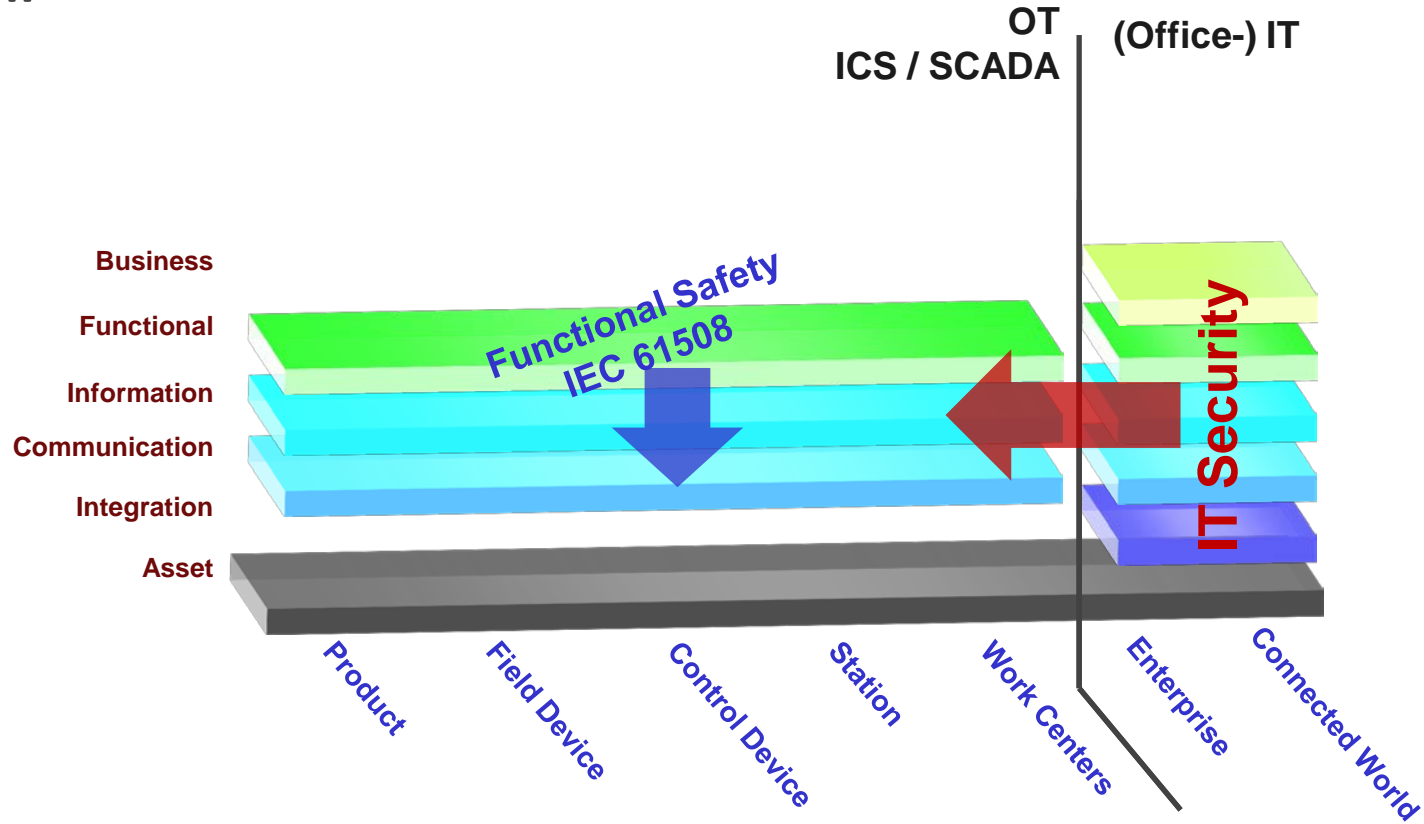


# RAMI - Production



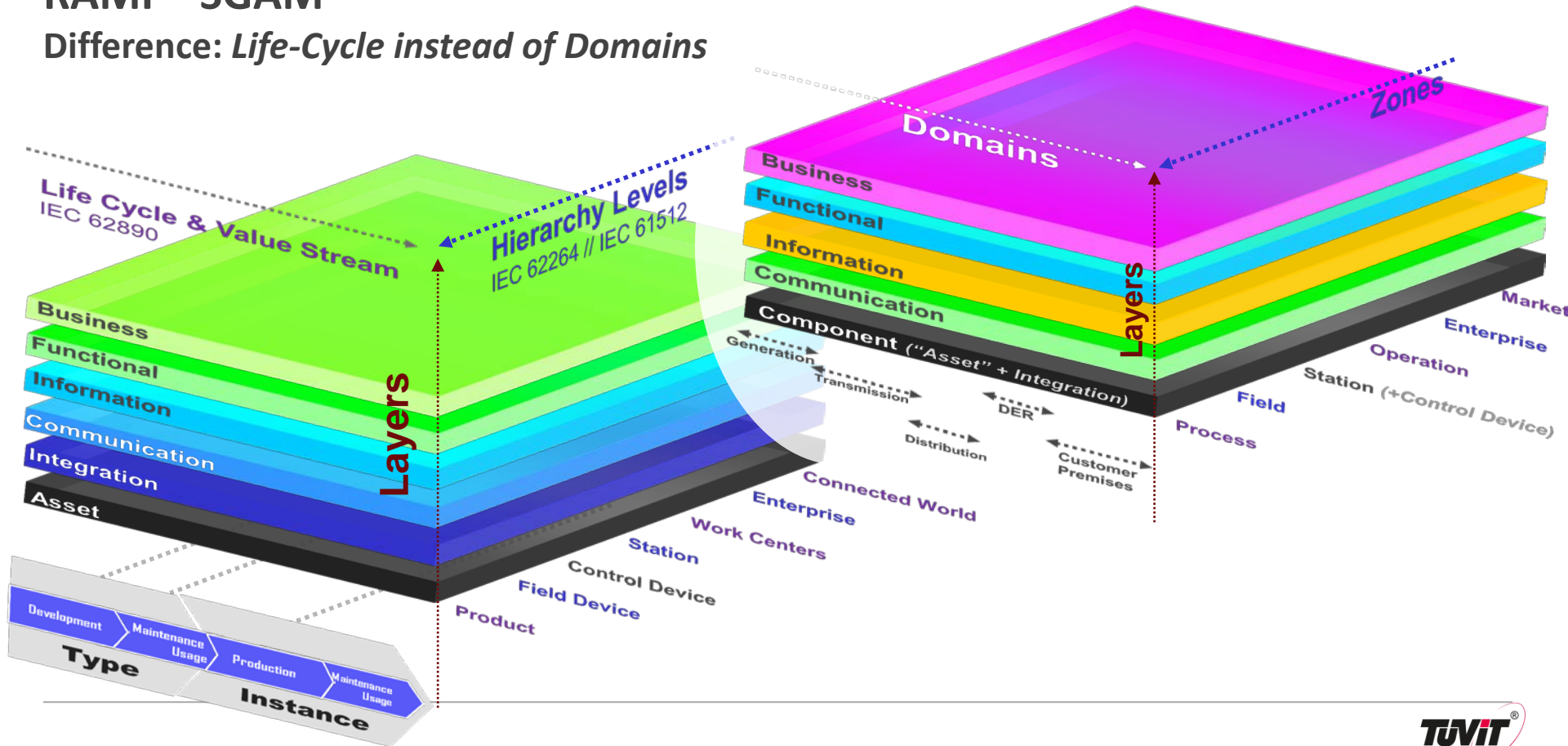
# RAMI

## Ziel



# RAMI – SGAM

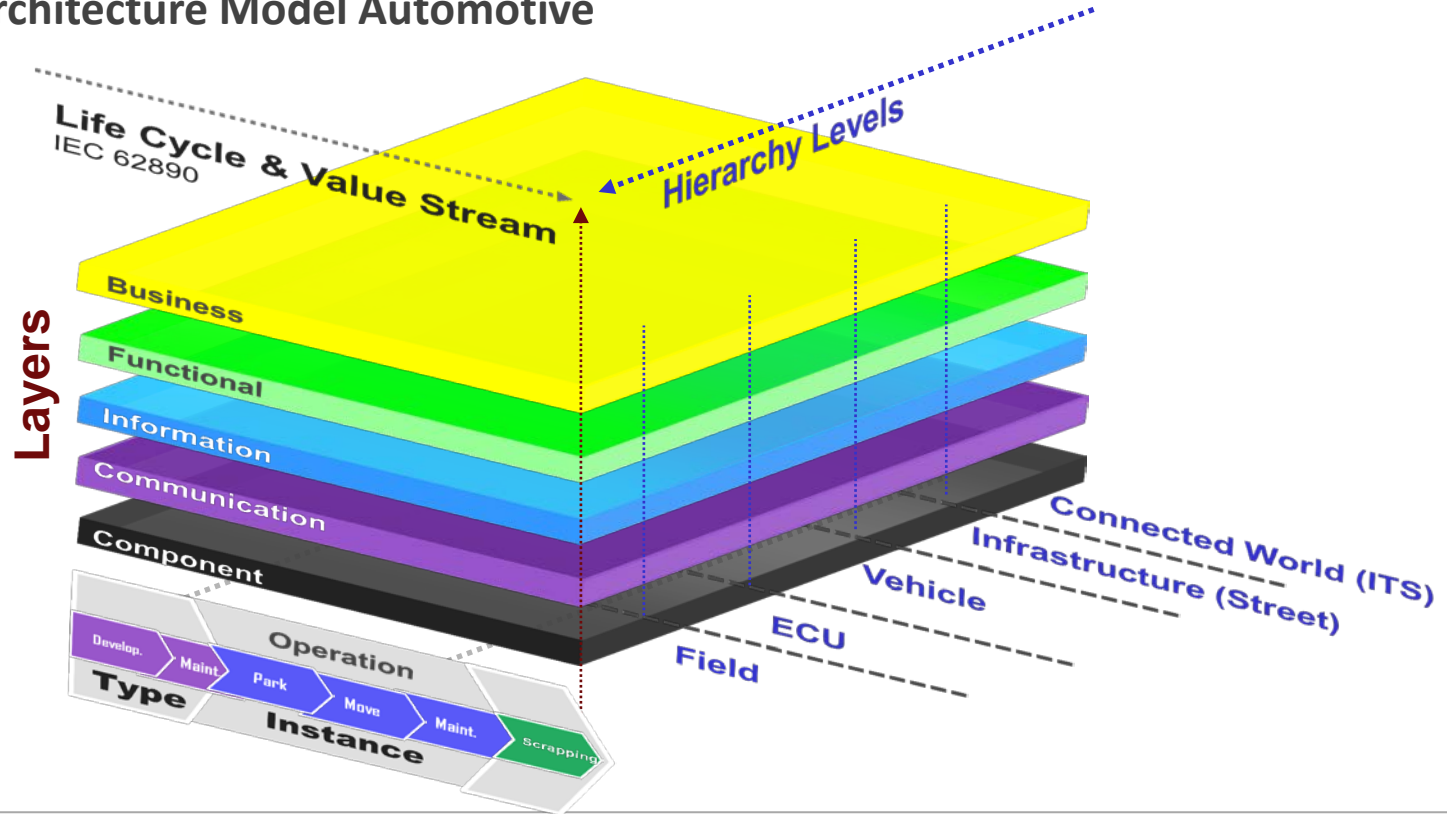
Difference: *Life-Cycle instead of Domains*





# RAMA

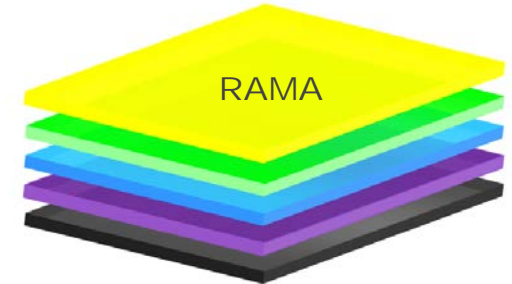
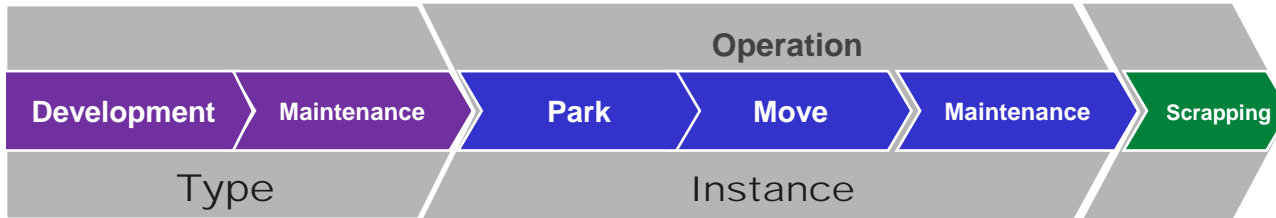
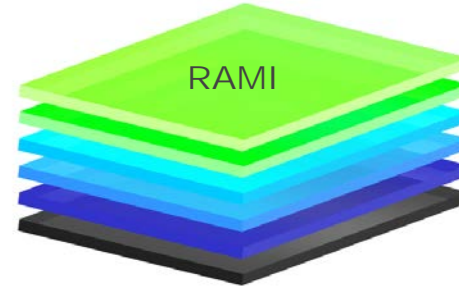
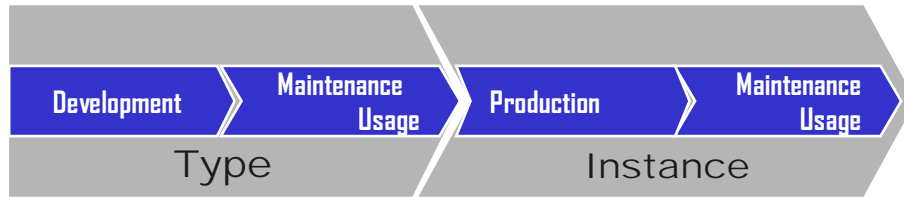
## Reference Architecture Model Automotive





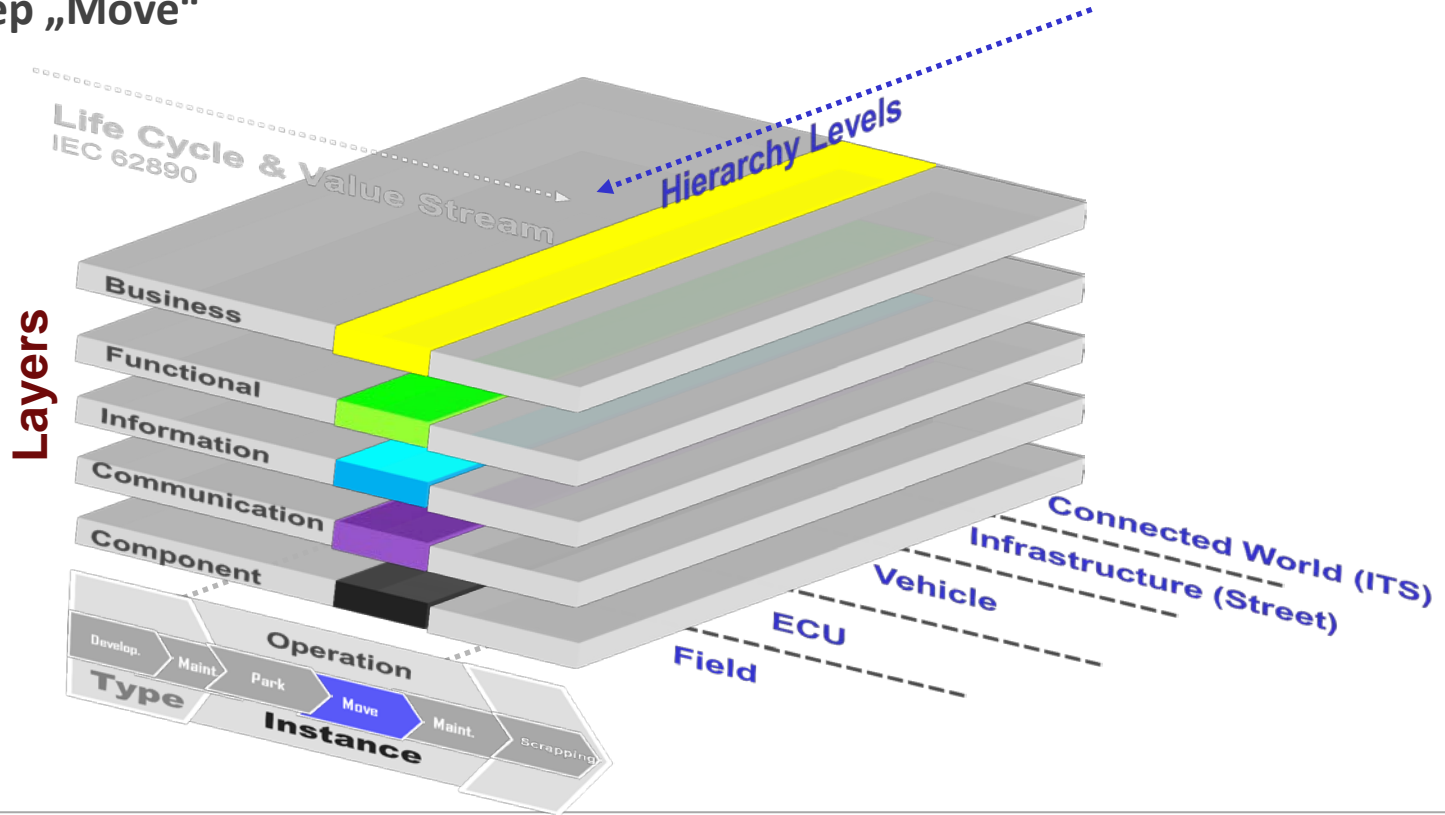
# RAMA

## Reference Architecture Model Automotive – Life Cycle & Value Stream

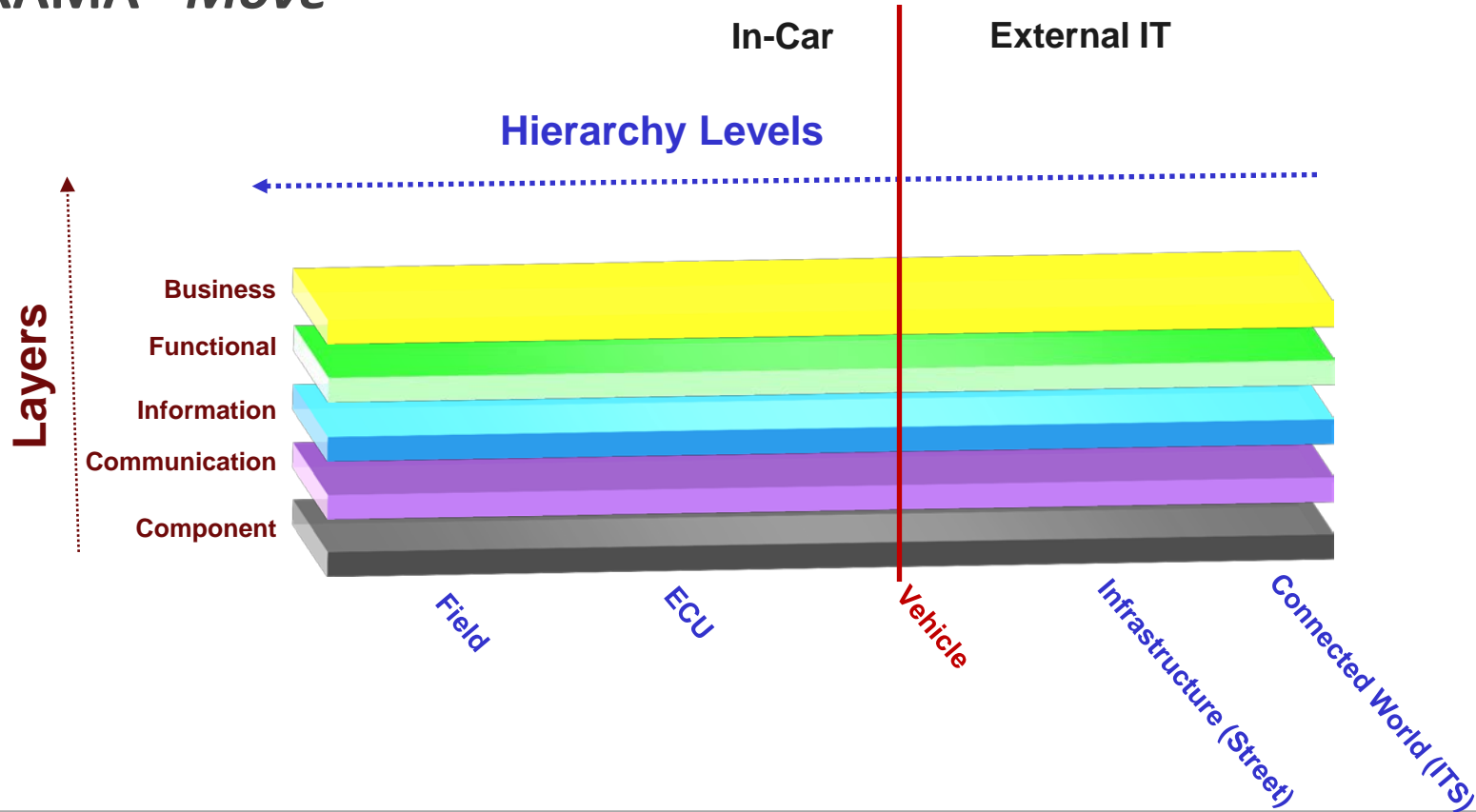


# RAMA

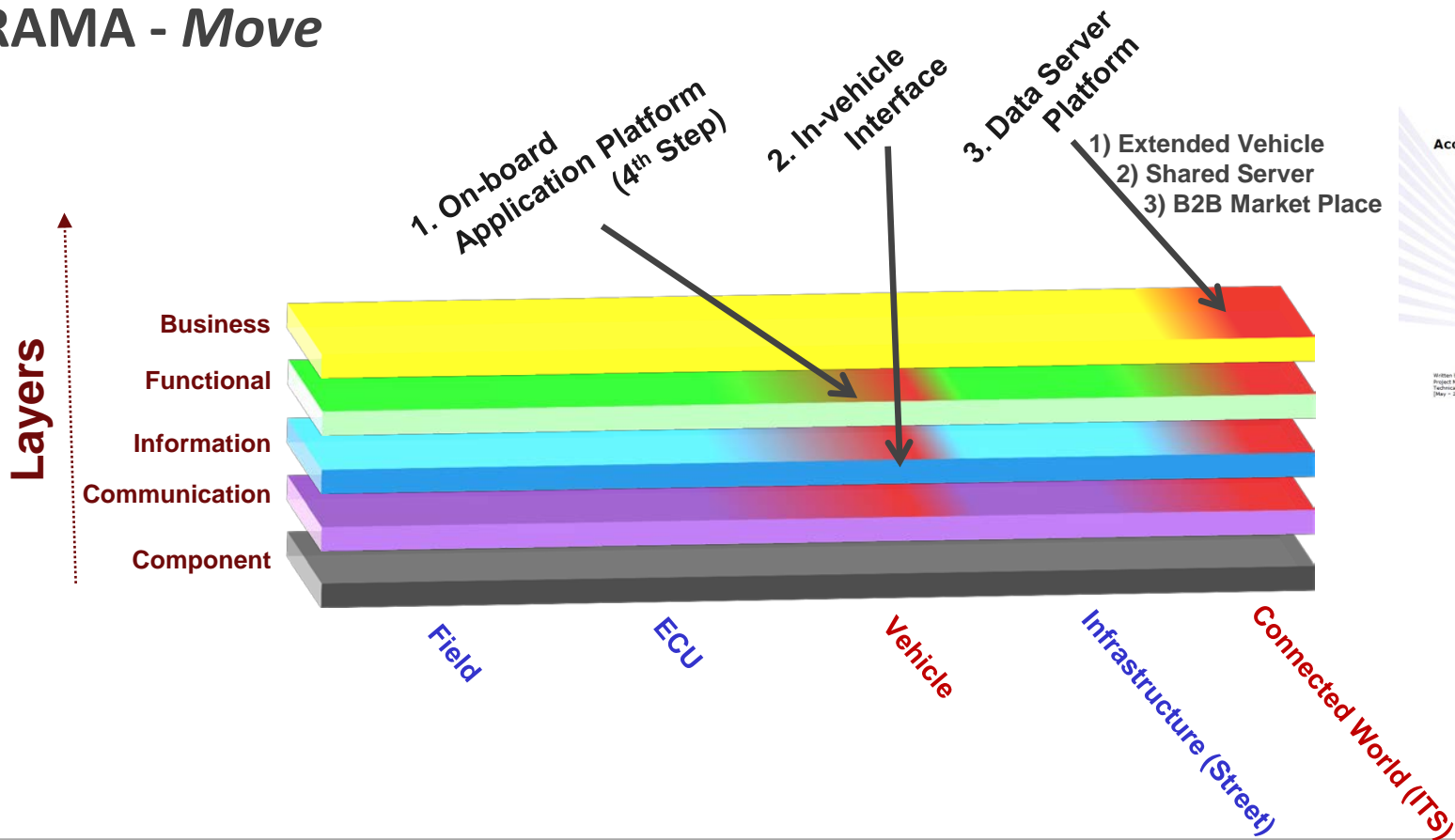
## Life Cycle Step „Move“



# RAMA - Move



# RAMA - Move



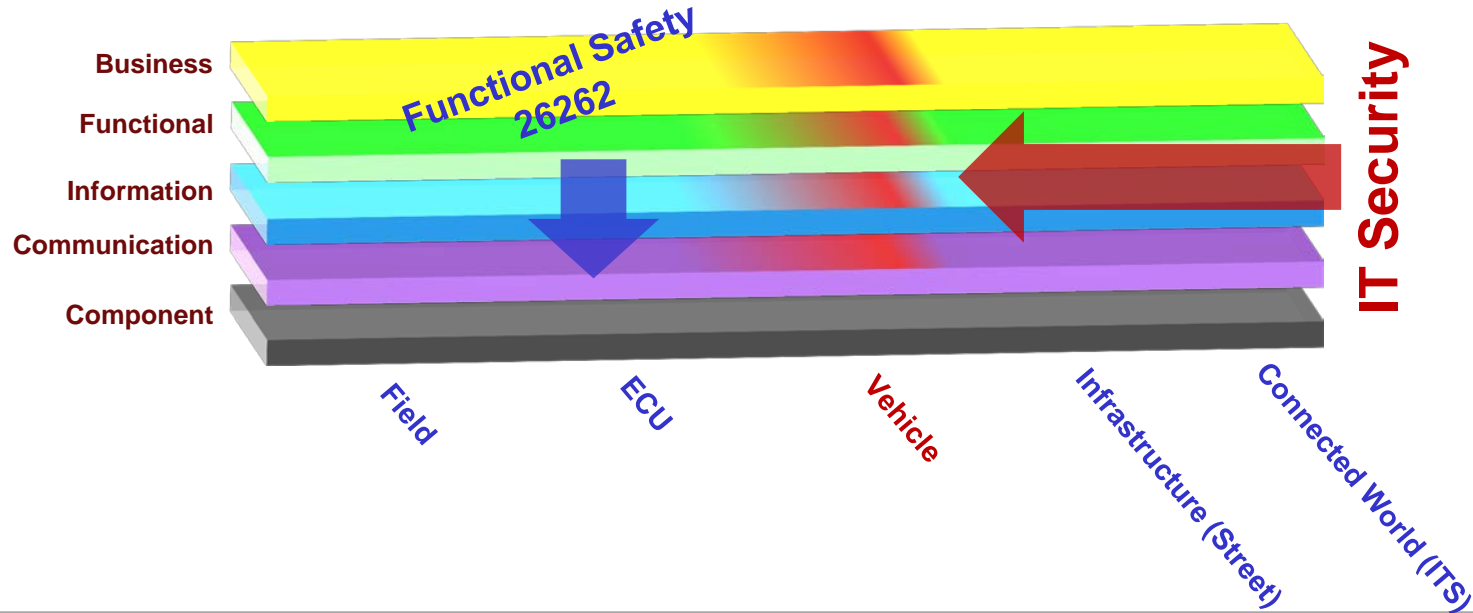
Access to In-vehicle Data and Resources

Final Report

Written by Authors: M McCarthy, M Seidl, S Mahan, J Hopkin, A Stevens, F Oppenheimer  
Project Manager: M Kuhlmann  
Technical Review: R. Coenen  
(May - 2017)

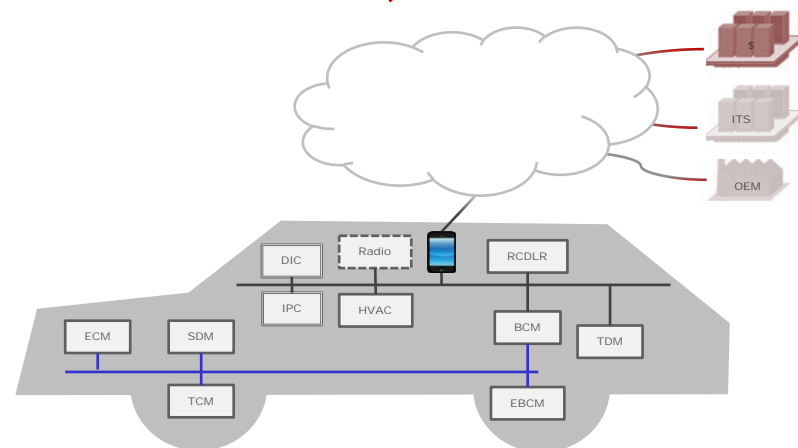
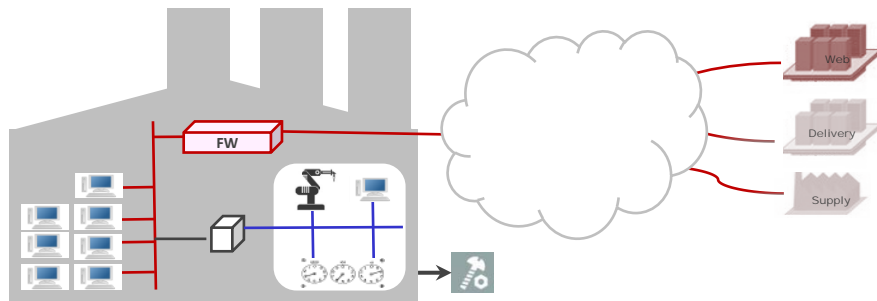
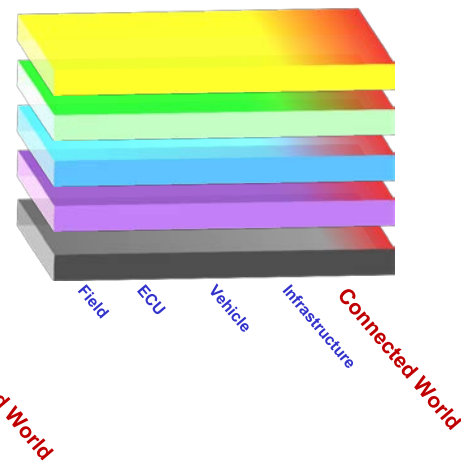
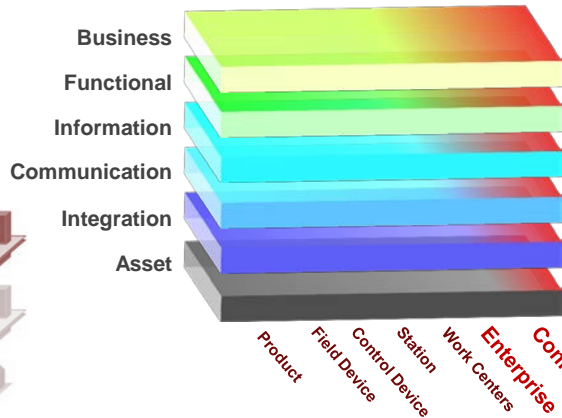
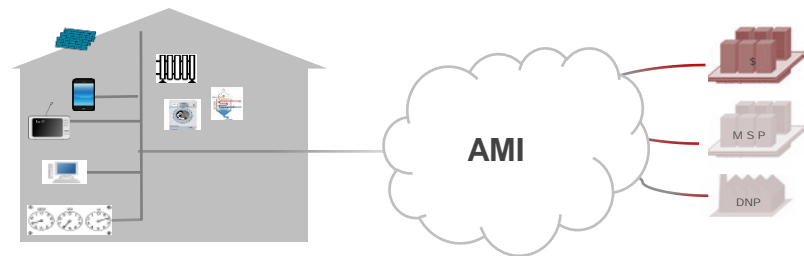
TIRL

# RAMA - Move



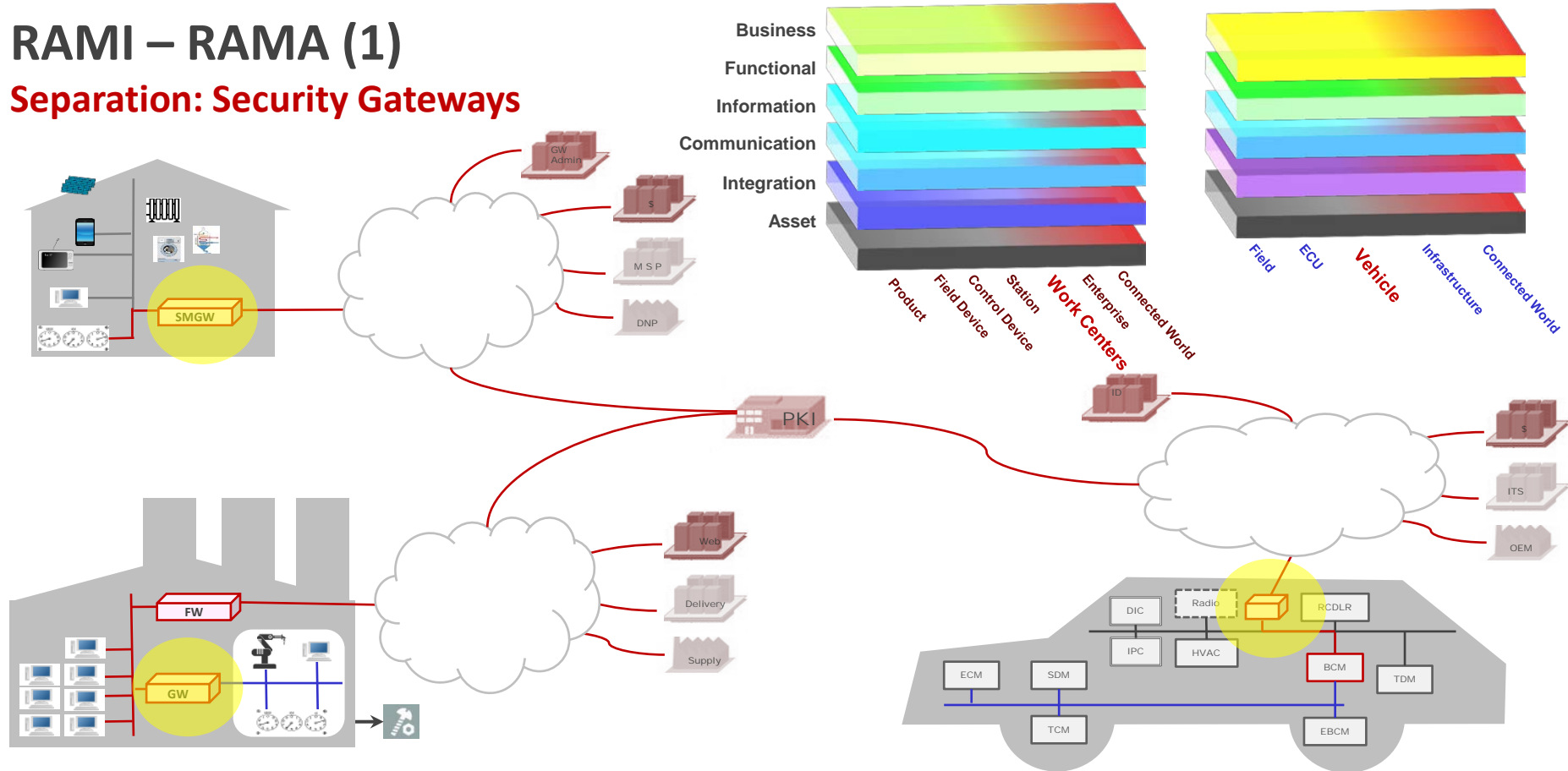
# RAMI - RAMA

## Central (Cloud-) Approach



# RAMI – RAMA (1)

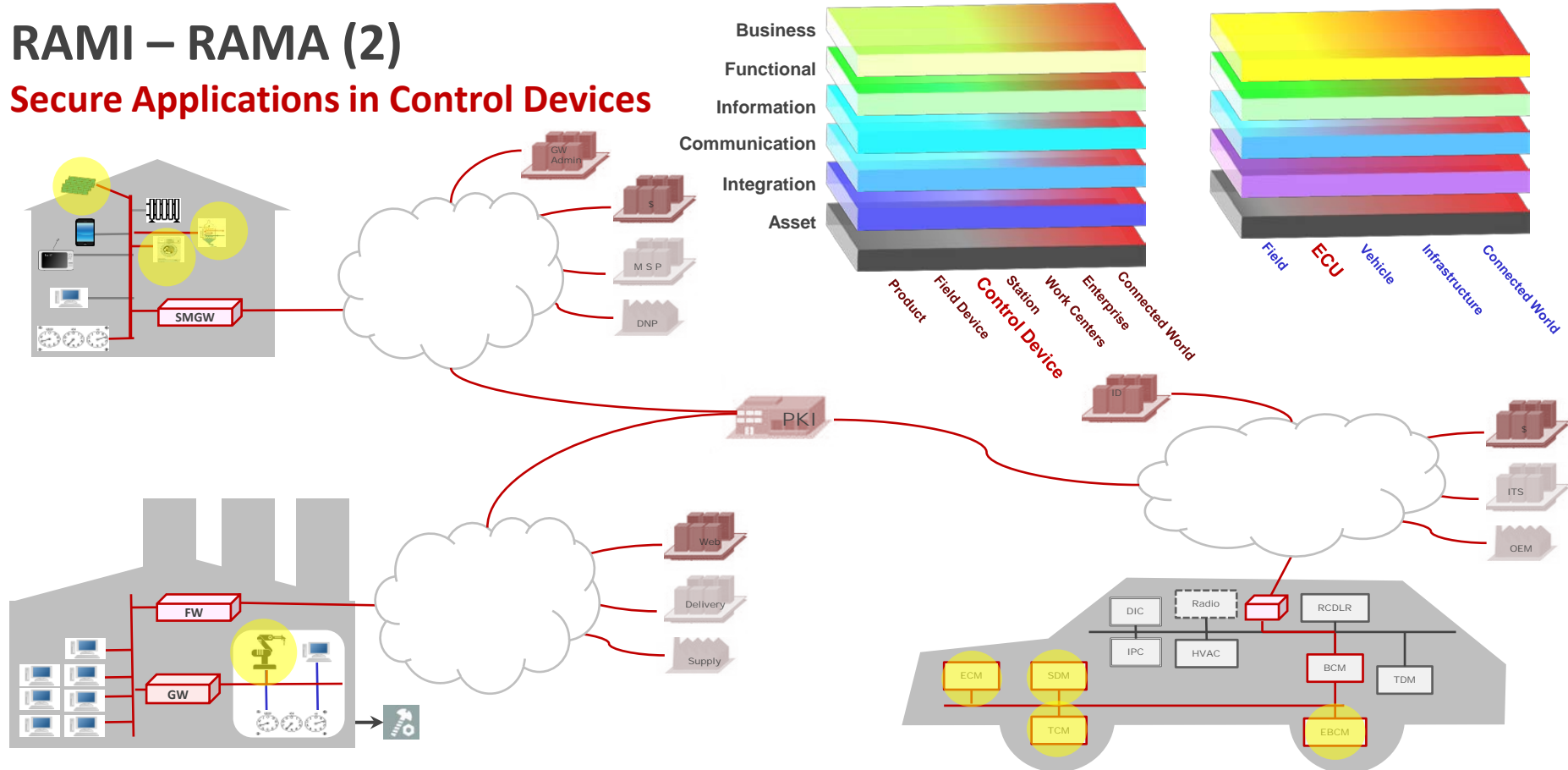
## Separation: Security Gateways





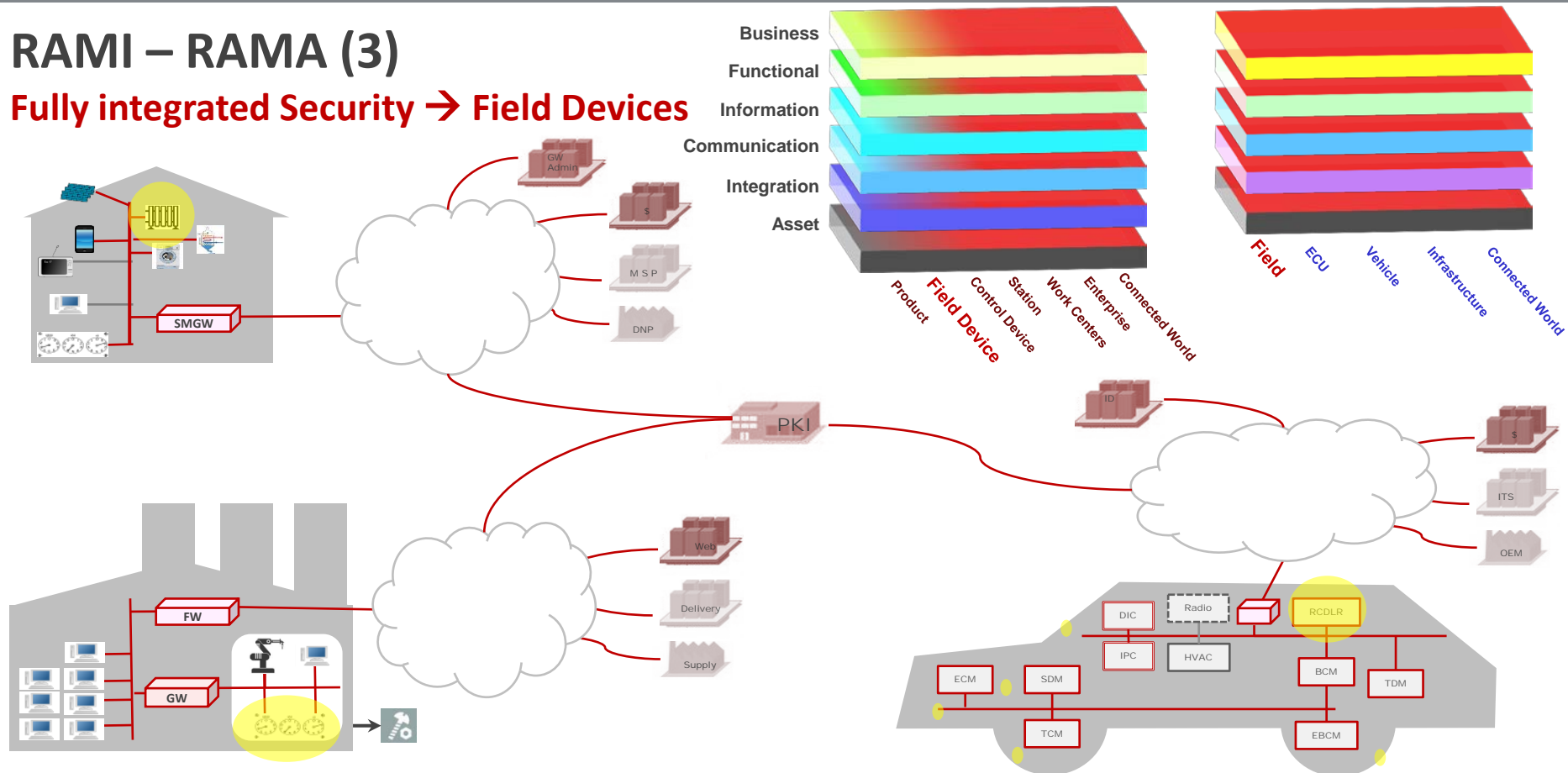
# RAMI – RAMA (2)

## Secure Applications in Control Devices



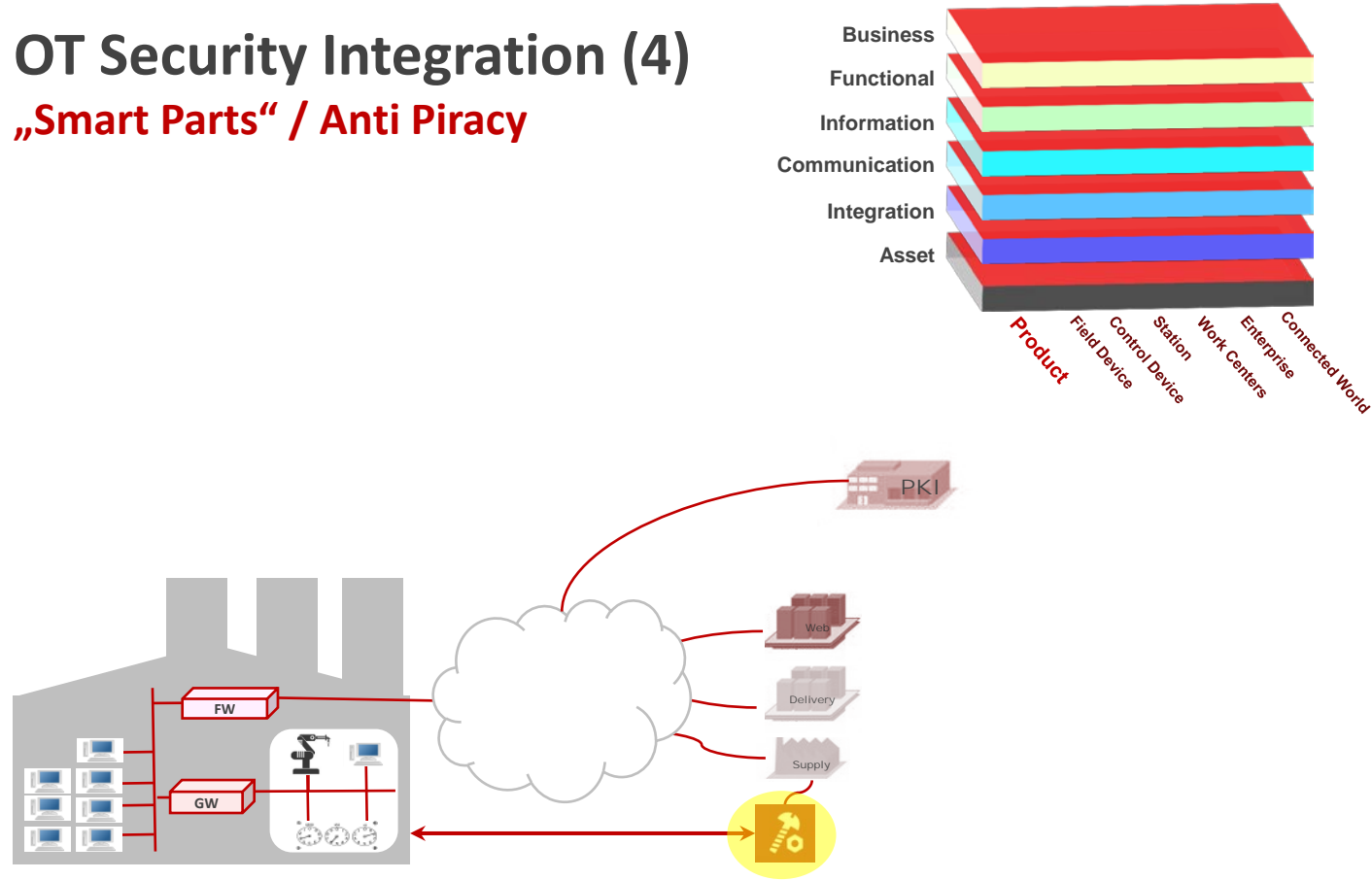
# RAMI – RAMA (3)

Fully integrated Security → Field Devices



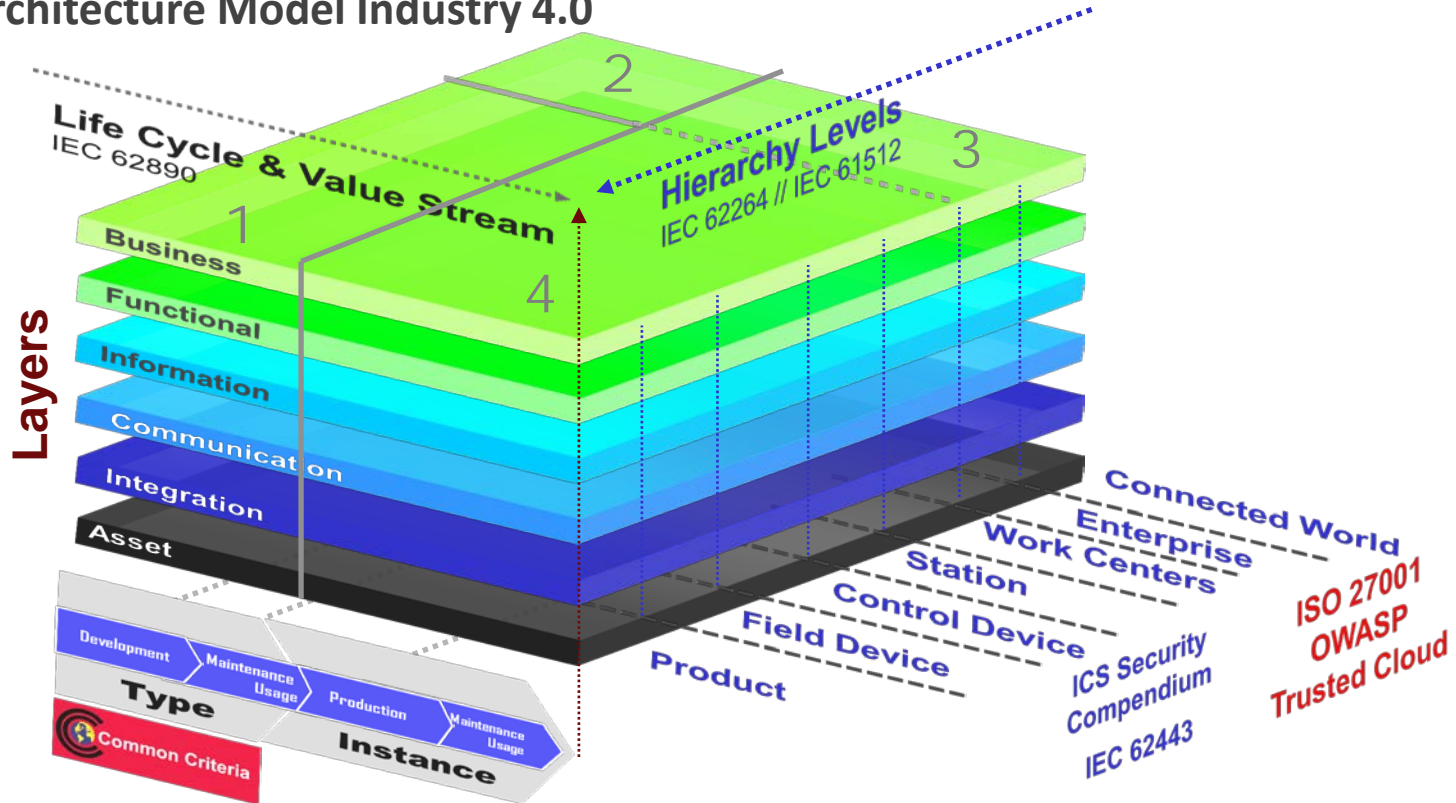
# OT Security Integration (4)

## „Smart Parts“ / Anti Piracy

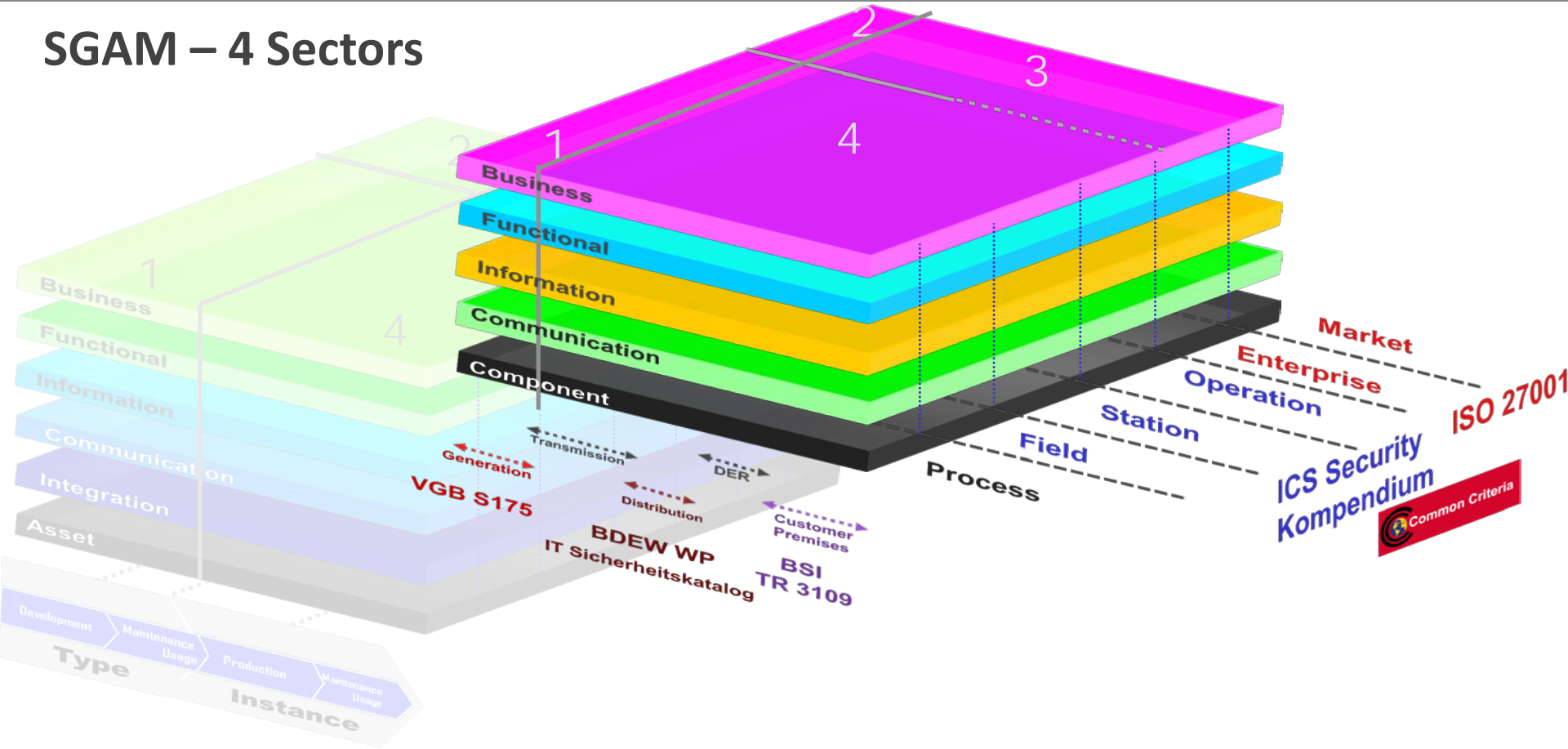


# RAMI – 4 Sectors

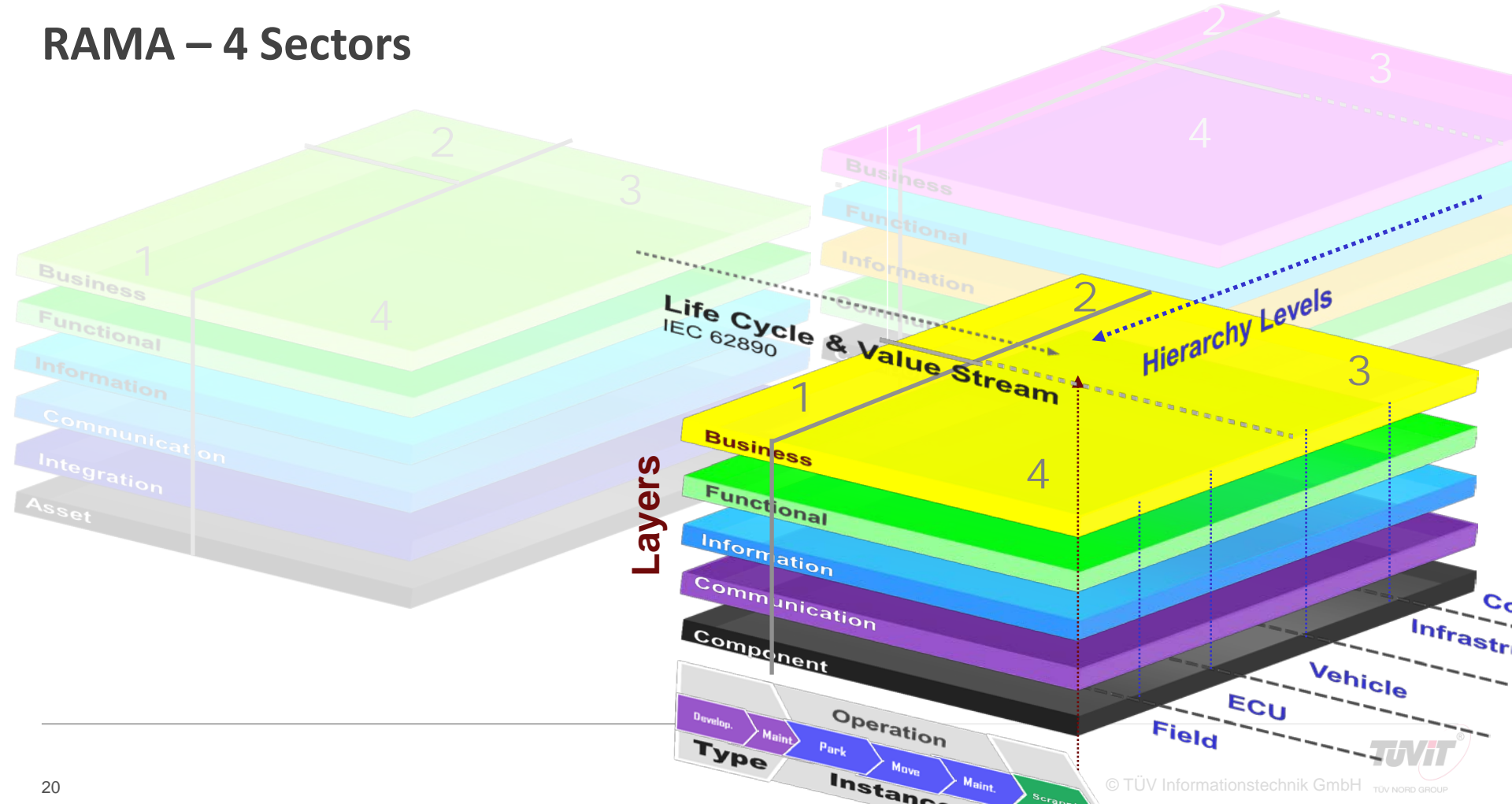
## Reference Architecture Model Industry 4.0



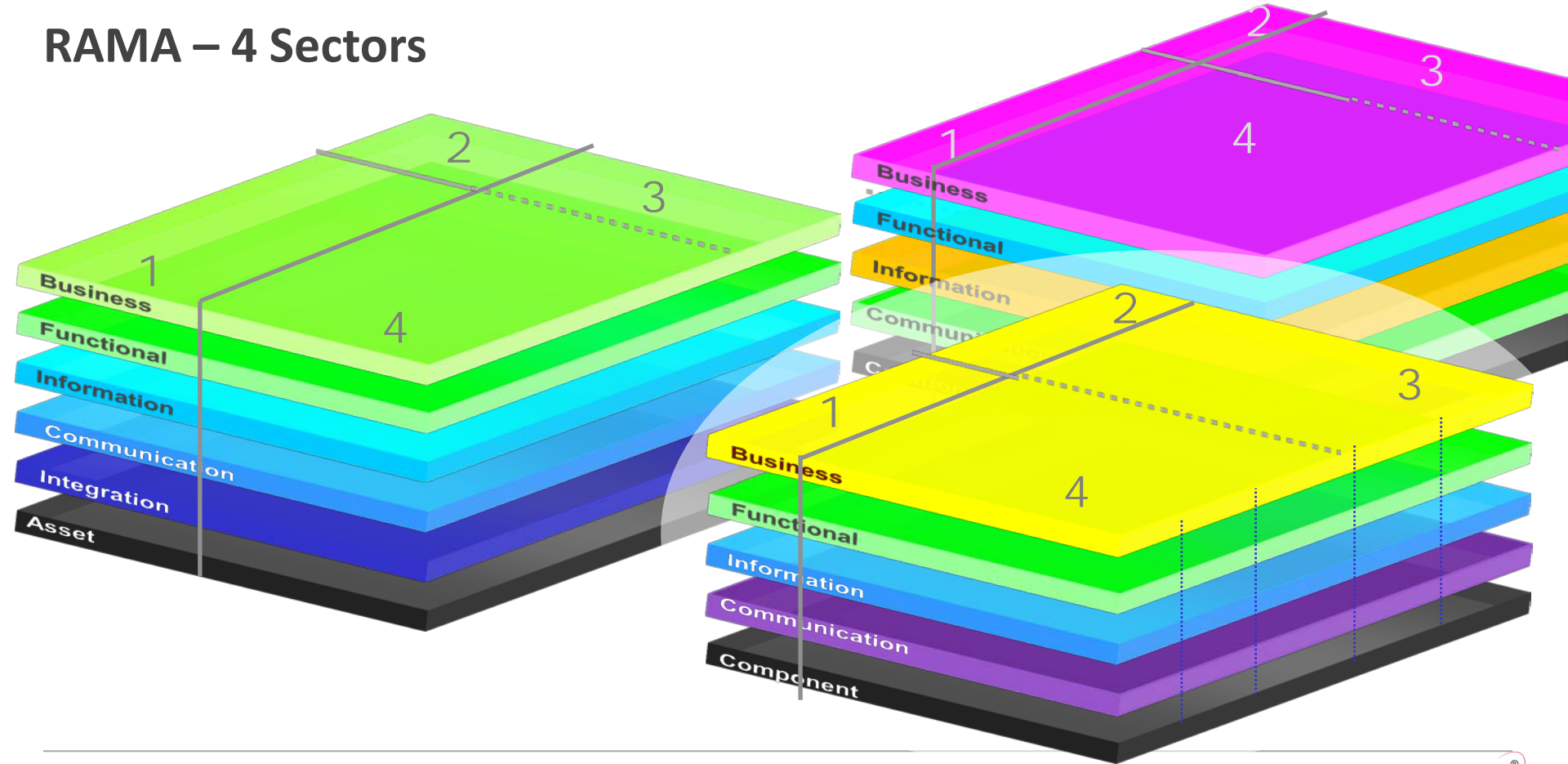
# SGAM – 4 Sectors



# RAMA – 4 Sectors



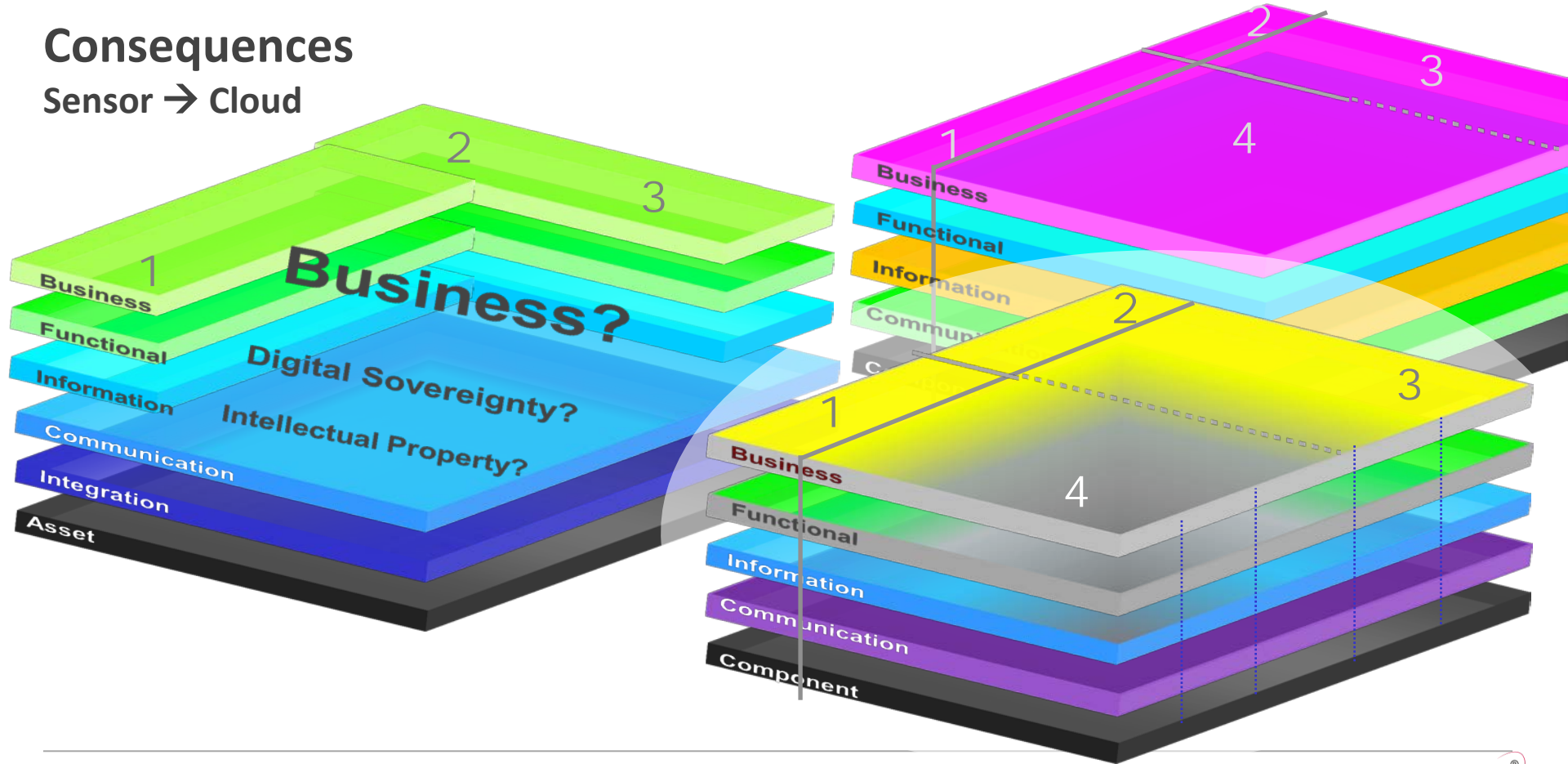
# RAMA – 4 Sectors





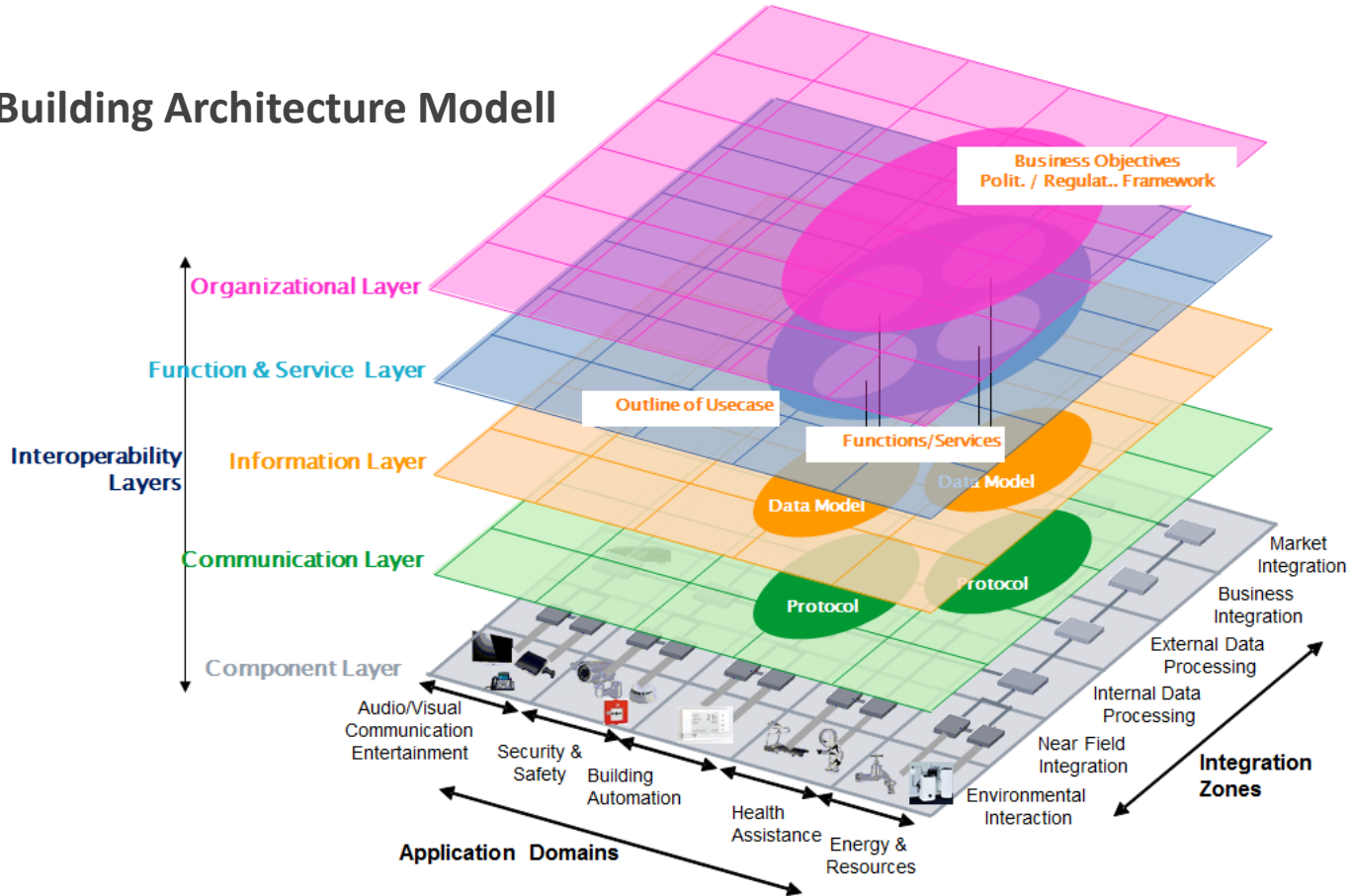
# Consequences

Sensor → Cloud



# HBAM

## Home and Building Architecture Modell



# Thank you

## TÜV Informationstechnik GmbH

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